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09/612,633	07/07/2000	Tomio Mituhashi	1341.1008-D/JDH	8985

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EXAMINER

LEUNG, CHRISTINA Y

ART UNIT	PAPER NUMBER
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2633

DATE MAILED: 09/11/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/612,633

Applicant(s)

MITUHASHI, TOMIO

Examiner

Christina Y. Leung

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 19 July 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 11-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 11-23 is/are rejected.
- 7) ☒ Claim(s) 18 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☒ Certified copies of the priority documents have been received in Application No. 09/046558.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2,3,4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Election/Restrictions*

1. Applicant's election of claims 11-23 in Paper No. 7 is acknowledged. The election has been treated as an election without traverse, since Applicant has also submitted an amendment (part of Paper No. 7) canceling claims 1-10. Examiner notes that the amendment had not been entered when the restriction requirement was made but has been entered now. Claims 1-10 are withdrawn from further consideration because they have been canceled.

### *Priority*

2. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy has been filed in parent Application No. 09/046,558, filed on March 24, 1998.

### *Claim Objections*

3. Claim 18 is objected to because of the following informalities: Claim 18 recites "a light signal" in line 6 of the claim. Examiner respectfully suggests that the phrase be changed to "an optical signal" for consistency since the term "optical signal" is used in the rest of the claim. Appropriate correction is required.

### *Claim Rejections - 35 USC § 112*

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

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5. Claim 19 is rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

6. Claim 19 recites "wherein the light receiving section and the light emitting section are covered with a same lens." Claim 17, on which it depends, already recites first and second converging lenses. While Applicants' specification supports an embodiment of the invention where instead of two converging lenses, only one is used (as shown in Figure 9), it does not specifically support an embodiment where another converging lens is used in addition to two converging lenses. Examiner notes that although the specification also discusses additional lenses other than converging lenses (such as lens 643 shown in Figure 9 with a converging lens 621), Examiner also did not find specific support for an embodiment comprising two converging lenses and one lens covering the light receiving section and the light emitting section.

*Claim Rejections - 35 USC § 102*

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C.

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122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

8. Claims 11 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Takezawa et al. (US 4,625,333 A).

Regarding claim 11, Takezawa et al. disclose an optical communication unit provided in an apparatus for executing communication by using optical signals (Figures 1 and 2) comprising:

a light emitting section 14 for transmitting an optical signal to an apparatus as a communicating partner;

a light receiving section 16 for receiving an optical signal from the apparatus as a communicating partner; and

a shielding section 23 for preventing incidence of an optical signal from the light emitting section to the light receiving section (column 1, lines 11-64).

Regarding claim 12, Takezawa et al. disclose that the unit further comprises a connecting section with an optical cable unit (fiber 1 or fibers 26 and 27), the optical communication unit transmitting and receiving signals to and from the apparatus as a communicating partner via the optical cable unit (Figures 1 and 2).

9. Claims 11 and 12 are rejected under 35 U.S.C. 102(e) as being anticipated by Abe et al. (US 5,875,047 A).

Regarding claim 11, Abe et al. disclose an optical communication unit (Figure 7) provided in an apparatus for executing communication by using optical signals comprising:

a light emitting section 54 for transmitting an optical signal to an apparatus as a communicating partner;

a light receiving section 53 for receiving an optical signal from the apparatus as a communicating partner; and

a shielding section (the outer casing of elements 53 and 54) for preventing incidence of an optical signal from the light emitting section to the light receiving section (column 5, lines 36-67).

Regarding claim 12, Abe et al. disclose that the unit further comprises a connecting section with an optical cable unit (fibers 55 and 56), the optical communication unit transmitting and receiving signals to and from the apparatus as a communicating partner via the optical cable unit (Figure 7).

10. Claim 11 is rejected under 35 U.S.C. 102(b) as being anticipated by Wilmoth (US 5,416,627 A).

Regarding claim 11, Wilmoth discloses an optical communication unit provided in an apparatus for executing communication by using optical signals (Figures 3 and 4) comprising:

a light emitting section (light emitting assembly 124, including emitters 140) for transmitting an optical signal to an apparatus as a communicating partner;

a light receiving section (light sensing assembly 122, including photodiode 132 shown in Figure 4) for receiving an optical signal from the apparatus as a communicating partner; and

a shielding section 114 for preventing incidence of an optical signal from the light emitting section to the light receiving section (column 6, lines 21-60).

11. Claims 11, 14, 15, and 21 are rejected under 35 U.S.C. 102(e) as being anticipated by Ota (US 5,959,752 A).

Regarding claim 11, Ota discloses an optical communication unit (Figures 22a-b) provided in an apparatus for executing communication by using optical signals comprising:

- a light emitting section 875 for transmitting an optical signal to an apparatus as a communicating partner;

- a light receiving section 876 for receiving an optical signal from the apparatus as a communicating partner; and

- a shielding section (cylinders 878) for preventing incidence of an optical signal from the light emitting section to the light receiving section (Figures 22A and 22B, and column 16, lines 22-55).

Regarding claim 14, Ota discloses an optical communication unit provided between apparatuses each executing optical communication and transferring an optical signal (Figure 2B; column 8, lines 54-67; column 9, lines 1-7) comprising:

- an optical cable 6 for transferring an optical signal; and

- a signal transmitting/receiving section comprising

  - a connecting section 5 provided at the edge of the optical cable for connection to the apparatuses,

  - a light receiving section 9 for receiving an optical signal from the apparatuses and transmitting the optical signal through the optical cable;

  - and a light emitting section 8 for transmitting the optical signal transmitted via the optical cable to the apparatus.

Regarding claim 15, Ota discloses that the optical cable has a pair of paths for transferring optical signals in different directions respectively (column 8, lines 57-59).

Regarding claim 21, Ota discloses that the light receiving section has a circuit changing an available area thereof according to a transmission distance of an optical signal (Figures 8A and 8B). The system disclosed by Ota may receive signals transmitted through free space or through an optical fiber. It is well known in the art that signals transmitted through free space typically have a shorter transmission distance compared to through an optical fiber, and therefore, Ota discloses that the receiving section may change to adjust to different transmission distances.

*Claim Rejections - 35 USC § 103*

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takezawa et al., Abe et al., Wilmoth, or Ota as discussed above with regard to claim 11 and further in view of Kobayashi (US 5,986,785 A)

Regarding claim 13, Takezawa et al., Abe et al., Wilmoth, and Ota each disclose a system as discussed above with regard to claim 11, but they do not specifically disclose a filter which cuts off light to both the emitting section and the detecting section.

It is well known in the art that a filter may be used to block unwanted light from an optical receiver. It is also well known in the art that a filter may be used to further ensure that light from an emitter is of a particular wavelength range. Kobayashi in particular teach that a single optical filter may also be placed in front of a light emitting section and a light receiving



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section arranged next to each other (Figure 1B; column 2, lines 58-67; column 3, lines 1-8). It would have been obvious to a person of ordinary skill in the art to use a filter in order to block out unwanted light as taught by Kobayashi in front of the emitting and receiving sections disclosed by Takezawa et al., Abe et al., Wilmoth, or Ota, and it also would have been obvious to a person of ordinary skill in the art to arrange the filter in front of both the emitting and receiving sections as shown by Kobayashi as an engineering design choice of a way to arrange the elements as desired.

14. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ota et al.

Regarding claim 16, Ota discloses a system as discussed above with regard to claims 14 and 15 but does not specifically disclose a shielding section used in that system. However, it is well known in the art that shields may be used in a transceiver to prevent the light from the emitter from being received by the detector. Ota suggests that the system may comprise a shielding section for preventing incidence of an optical signal from the light emitting section to the light receiving section when the light emitters and detectors are used for wireless communications (Figures 22A and 22B, and column 16, lines 22-55, which discloses cylinders 878 shielding emitter 875 and receiver 876). It would have been obvious to a person of ordinary skill in the art to also use shields in the system including an optical cable disclosed by Ota and discussed with regard to claims 14 and 15 as necessary in order to prevent the emitter from transmitting light to the adjacent detector.

15. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ota in view of Takezawa et al. (US 4,625,433 A).

Regarding claim 17, Ota discloses a system as discussed above with regard to claim 14 but does not specifically disclose first and second converging lenses used in that system. However, Ota does suggest that converging lens may be used to focus the incoming and outgoing light when the light emitters and detectors are used for wireless communications (Figure 22B, which shows lenses 877). Furthermore, it is well known in the art that converging lenses may be used to guide light from an optical fiber to a detector or from an emitter to an optical fiber accurately. Takezawa et al. in particular teach first and second converging lenses 61 and 62 corresponding to a detector and a emitter (Figure 5). It would have been obvious to a person of ordinary skill in the art to use converging lenses as taught by Takezawa et al. in order to accurately guide the light signal between the optical fiber and the optical components.

16. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ota in view of Takezawa et al. as applied to claims 14 and 17 above, and further in view of Tsuji et al. (US 5,664,035 A).

Regarding claim 19, as well as it may be understood with regard to 35 U.S.C. 112 discussed above, Ota in view of Takezawa et al. describes a system including converging lenses as discussed above with regard to claims 14 and 17. However, Takezawa et al. do not specifically suggest that the emitter and the detector may be covered with a same lens.

Tsuji et al. teach that a light receiving section 223 and a light emitting section 222 may be covered with a same lens 231 (Figures 2a-b). It would have been obvious to a person of ordinary skill in the art to use a lens as taught by Tsuji et al. instead of the two lenses suggested by Takezawa et al. in the system suggested by Ota in view of Takezawa et al. as an engineering design choice of an alternative way to focus and guide the incoming and outgoing signals.

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17. Claims 22 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ota in view of Tsuji et al.

Regarding claims 22 and 23, Ota discloses a system as discussed above with regard to claim 14, but does not specifically disclose a converging lens. However, Tsuji et al. teach a light emitting section 222 and a light receiving section 221 integrated to each other and covered with a converging lens 231 (Figures 2a-b). They also teach that the converging lens 231 converges a signal from the apparatus to the cable 41 as well as from the cable to the apparatus (Figure 2a). It would have been obvious to a person of ordinary skill in the art to use a converging lens as taught by Tsuji et al. in the system disclosed by Ota in order to accurately guide the light signal between the optical fiber and the optical components.

18. Claims 14, 15, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Streck et al. (US 5,241,410 A).

Regarding claim 14, Streck et al. disclose an optical communication unit (Figure 14) provided between apparatuses each executing optical communication and transferring an optical signal comprising:

- an optical cable (such as element 64) for transferring an optical signal; and

- a signal transmitting/receiving section comprising

  - a light receiving section 74 for receiving an optical signal from the apparatus (telepoint 12, shown in Figure 13) and transmitting the optical signal through the optical cable;

  - and a light emitting section 82 for transmitting the optical signal transmitted via the optical cable to the apparatus.

Streck et al. do not specifically disclose a connecting section, but it is well known in the art that a coupler or other connecting section may be used to connect an apparatus to an optical cable. It would have been obvious to a person of ordinary skill in the art to specifically include a connecting section in the system disclosed by Streck et al. to ensure that the apparatus 12 is securely coupled to the optical fibers 64 and 68.

Regarding claim 15, Streck et al. disclose that the optical cable has a pair of paths for transferring optical signals in different directions respectively (Figure 14).

Regarding claim 18, Streck et al. further disclose that the light receiving section has a first modulating/demodulating section (photodetector 74 and emitter 76) for receiving an optical signal transmitted from the apparatus, converting the optical signal to an electric signal and also for demodulating the electric signal to a light signal and sending the optical signal into the optical cable. The photodetector 74 they disclose converts the optical signal received from the apparatus into an electrical signal; the emitter 76 converts the electrical signal into an optical signal for transmission into the cable.

Streck et al. further disclose that the light emitting section has a second modulating/demodulating section (emitter 82 and photodetector 84) for receiving the optical signal transferred through the optical cable and converting the optical signal to an electric signal and also for demodulating the electric signal to an optical signal and transmitting the optical signal to the apparatus. The photodetector 84 receives and converts the optical signal from the cable to an electrical signal; emitter 82 converts the electrical signal into an optical signal for transmission to the apparatus.

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19. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ota or Streck et al. as discussed above with regard to claim 14, and further in view of Helot et al.


Regarding claim 20, Ota and Streck et al. disclose systems as discussed above with regard to claim 14. Neither Ota nor Streck et al. specifically disclose that the light receiving section may be changed according to a speed or transmission distance of an optical signal. However, Helot et al. (Figures 1 and 4) teach that a light receiving section may switch between two different areas depending on characteristics of the incoming signal. In particular, they teach a receiver 40 for high-speed communications and a receiver 42 for low-speed communications. It would have been obvious to a person of ordinary skill in the art to include different receiving devices suited for different communication speeds as taught by Helot et al. in the systems disclosed by Ota for Streck et al. in order to optimize reception of signals with different characteristics.

### *Conclusion*

20. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christina Y. Leung whose telephone number is 703-605-1186. The examiner can normally be reached on Monday to Friday, 6:30 to 3:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on 703-305-4729. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9314.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4700.

  
JASON CHAN  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600

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